

The Atom and Atomic Structure



“Science cannot solve the ultimate mystery of nature. And that is because, in the last analysis, we ourselves are a part of the mystery that we are trying to solve.” – Max Planck

FORMAT

The test will consist of the following new topics:

- atomic models (solid sphere, plum pudding and nuclear)
- atomic structure
- isotopes
- ions
- nuclide symbols

Note: You will need your calculator

If you want partial credit, you must show your work. Attempt every problem and **DO NOT** leave any blanks.

VOCABULARY

model	neutron	electron	cation	cathode	mass number
atom	nucleus	proton	anion	anode	atomic number
ion	isotope	nucleon	entropy		

KNOW THESE MEN

John Dalton	Robert Millikan	Ernest Marsden	Democritus
J. J. Thomson	James Chadwick	Hans Geiger	George Stoney
Eugene Goldstein	Ernest Rutherford	Henry Moseley	

KNOW

- The Atomic Models
- Law of definite composition
- Law of multiple proportions
- Isotopes and Ions

BE ABLE TO

- write a nuclide symbol
- determine the number of protons, electrons and neutrons
- refer to the periodic table
- describe an atom

REVIEW

- conversions and unit analysis
- significant figures
- calculate density

PRACTICE

Directions: Complete the following table by filling in the blanks.

isotope	$^{44}\text{Ca}^{2+}$		^{197}Au	$^{35}\text{Cl}^-$		$^{59}\text{Co}^{2+}$
mass number		55			16	
protons		26				
neutrons					8	
electrons		23			10	
ion			neutral			

Directions: Write nuclide symbols for the following:

_____ an oxygen atom with 9 neutrons

_____ a manganese atom with a mass number of 57 and a loss of two electrons

_____ a sodium ion that has lost one electron

Directions: Describe the Nuclear atom.

Directions: Determine the density.

_____ If 116 grams of ethanol is needed for a chemical reaction, what is the volume of liquid you would use?